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Navy Tactical Edge Challenges
Aviation Perspective

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MIDS/Airborne Networking & Integration

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Navy Tactical Edge Challenges
Why Pursue Tactical IP Networks?

- Excerpt from Tactical IP Network experimentation plan for JEFX-06 frames the discussion:
  - Assumption: Airborne Tactical IP networks are likely to replace Link-16 as the airborne tactical network backbone of the future
  - Hypotheses:
    - Airborne tactical IP networks will enable airborne C2 nodes, battle managers, and shooters access to enhanced C2 data (e.g., commands, tasking, imagery, video, BFSA) at levels currently unavailable using existing links
    - Airborne tactical IP networks will enable the dynamic assimilation of tactical SA (e.g., imagery, video, data) at C2 nodes
  - Expected result: Self-synchronization of forces at all levels, providing dramatic improvement in mission effectiveness

Navy Tactical Edge Challenges

- Types of challenges
  - Technical
  - Programmatic
  - Financial

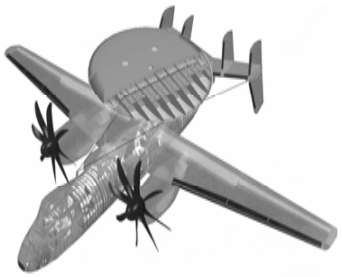
- Risk mitigation efforts

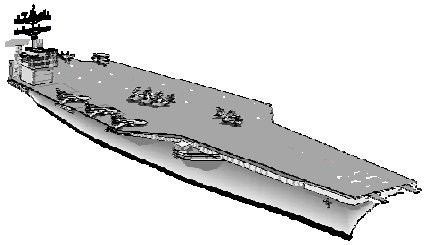
Navy Tactical Edge Challenges Technical

- Waveform/radio selection
  - MIDS JTRS status
  - Airborne Networking Waveform status

MIDS JTRS

- Navy initial platforms
  - E-2, F/A-18E/F, EA-18G
  - CVN, DDG





Navy Tactical Edge Challenges Technical

- Ship and aircraft integration
  - Antenna placement and functionality
  - Integration with combat system/aircraft operational flight program
  - Integrating additional hardware in tactical aircraft
- Defining the proprietary boundary
  - Open architecture processor design / non-proprietary means to interface to Operational Flight Program / Mission Computer

Navy Tactical Edge Challenges Technical

- Mobile Ad Hoc Networking challenges
  - Topology changes rapidly
  - Individual nodes/connections not dependable
- Shaking out the right applications
  - Imagery, mission planning, collaboration, machine-to-machine targeting, blue force situational awareness, Battle Damage Assessment
- Networks, applications must tolerate dynamic environment

Navy Tactical Edge Challenges Programmatic

- Defining warfighter requirements
- Alignment with architecture guidance
- Defining executable increments
- Coordination of a virtual organization
  - Alignment of systems engineering tasks among participating organizations is complex task

Navy Tactical Edge Challenges
Financial

- Capability across platforms requires coordinated sponsorship
  - Involved platforms must have a coordinated funding strategy

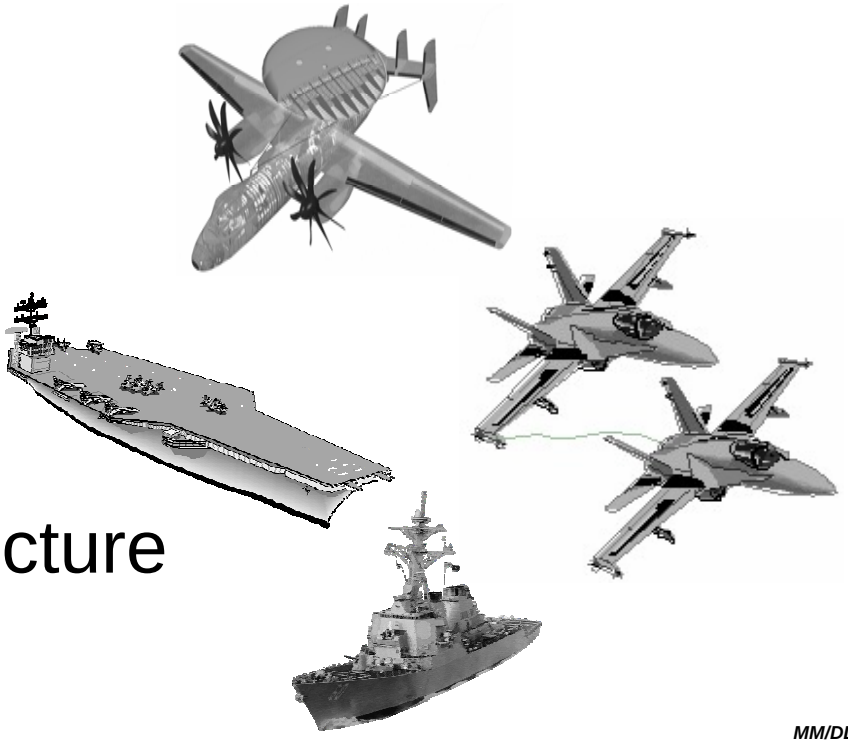
Navy Tactical Edge Challenges Risk Mitigation Efforts

- E-2 and P-3 HF SIPRNET
  - Low data rate chat, email, file transfer using High Frequency radios to access the SIPRNET
- EP-3 INMARSAT
  - Higher data rate chat, email, file transfer, web browsing, multiple security enclaves via INMARSAT
- Intra-Battle Group Wireless Networking (IBGWN)
  - Extends high data rate beyond line of sight network using VRC-99 radios
- Airborne Automated Digital Network System (aADNS)
  - Airborne routing device that is communication path, security enclave independent
- E-2, F/A-18 Tactical Targeting Network Technology (TTNT) Demonstration in JEFX-06

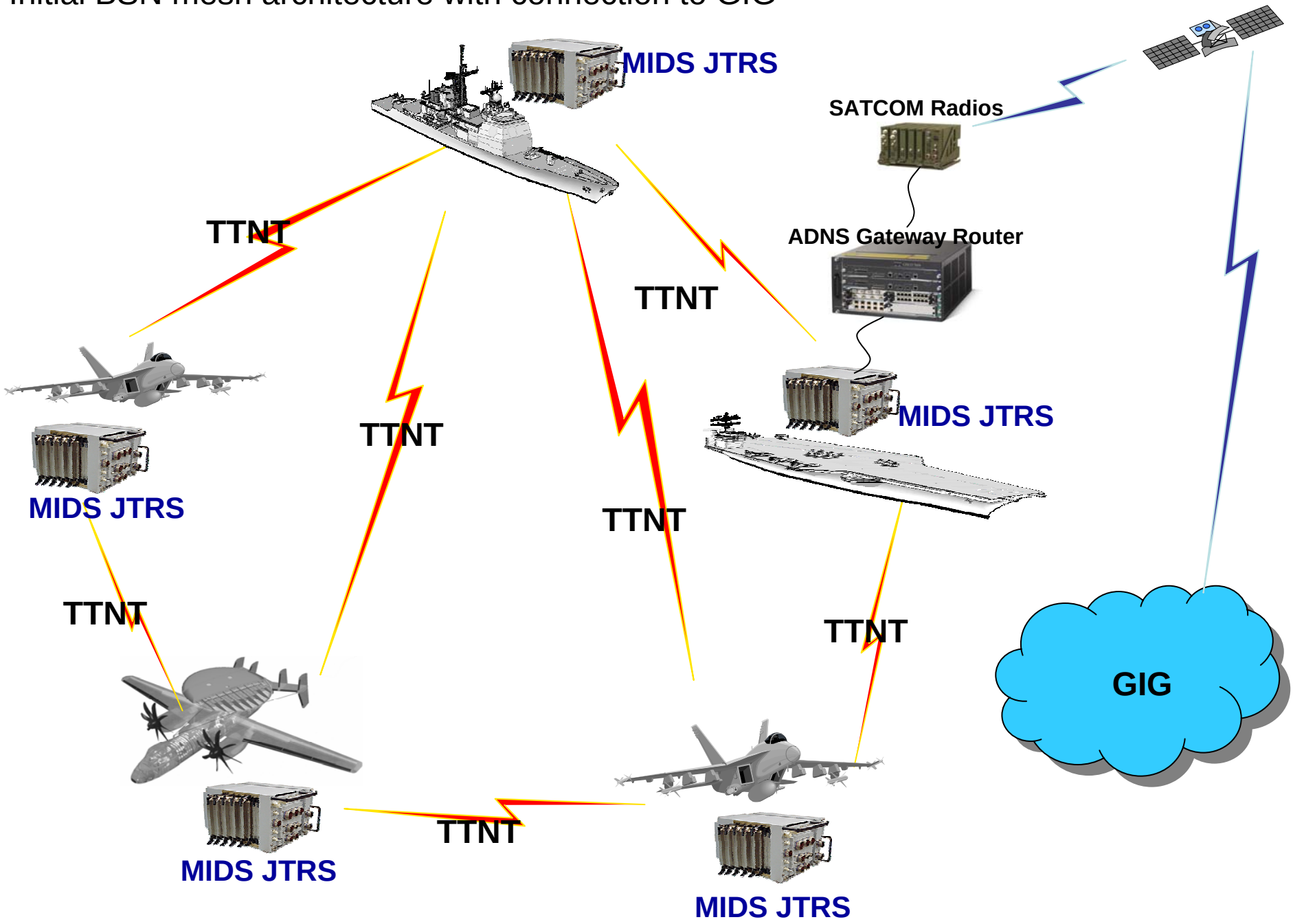
Battlespace Networking (BSN) Key Enablers

- Physical layer
  - MIDS JTRS
  - Airborne Networking Waveform
- Network Layer
  - Network Services
- Applications Layer
  - Mission Applications
- Platform Integration
  - Open System Architecture

MIDS JTRS



Initial BSN mesh architecture with connection to GIG



Navy Tactical Edge Challenges Future